Fundamentals of Computer Engineering

Module V - Unit I
CSS

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CSS basics

CSS basics

CSS (Cascading Style Sheets) is the language that defines the style of the elements of an HTML document in order to control the design, the appearance of our web pages made with HTML.

- It is an easy language to understand and learn, but it gives robust control on the presentation of HTML documents
- it specifies how the different HTML elements or tags to be presented on the screen.
- It is a language designed to save time, offline browsing, fast page load.

The current version is CSS3.

CSS basics

Which is the CSS syntax?

Style are defined as **rules** where each rule consists of two parts:
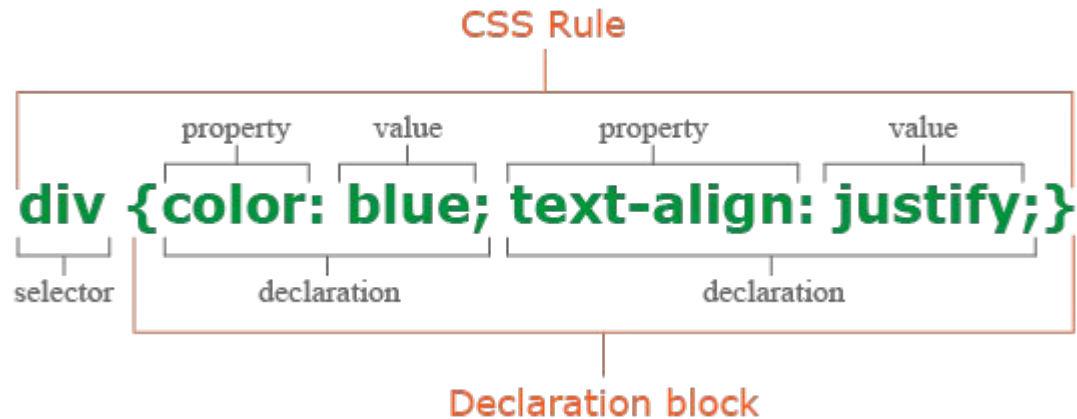
- The selector defines which HTML element or elements will be styled.

- The declaration defines the different formatting commands applied to the HTML elements.

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Which is the CSS syntax?

Declaration block is composed of different declaration, where each one declaration is composed of two elements:
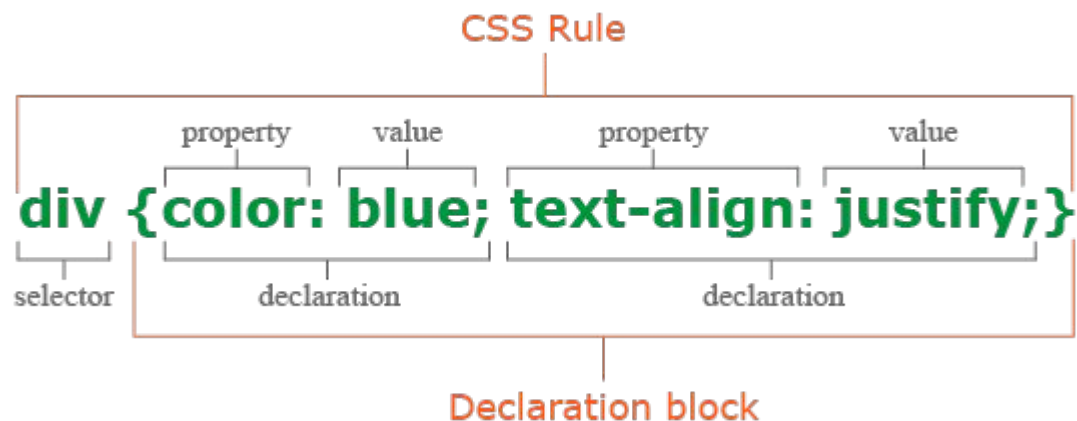
- Property which defines the command to apply over the selector.
- Value which defines the value of the property.

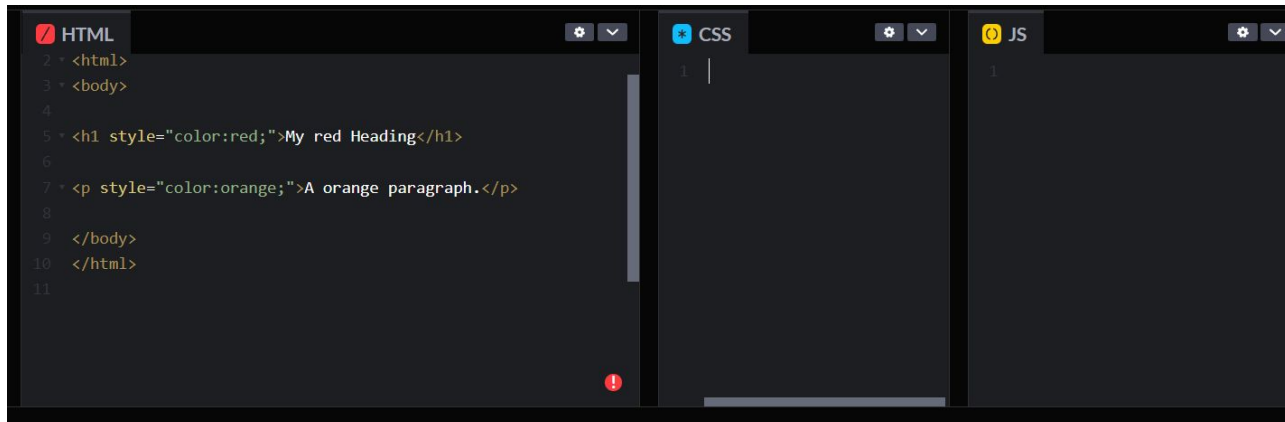# How to use CSS in my html document?

CSS can be added to HTML documents in 3 ways:

- Inline - by using the style attribute inside HTML elements
- Internal - by using a <style> element in the <head> section
- External - by using a <link> element to link to an external CSS file

The most common way to add CSS into a html document, is to keep the styles in one or more external CSS files.

Internal CSS

Inline CSS is used to apply a specific style to a single HTML element. This mode uses the style attribute of an HTML element.
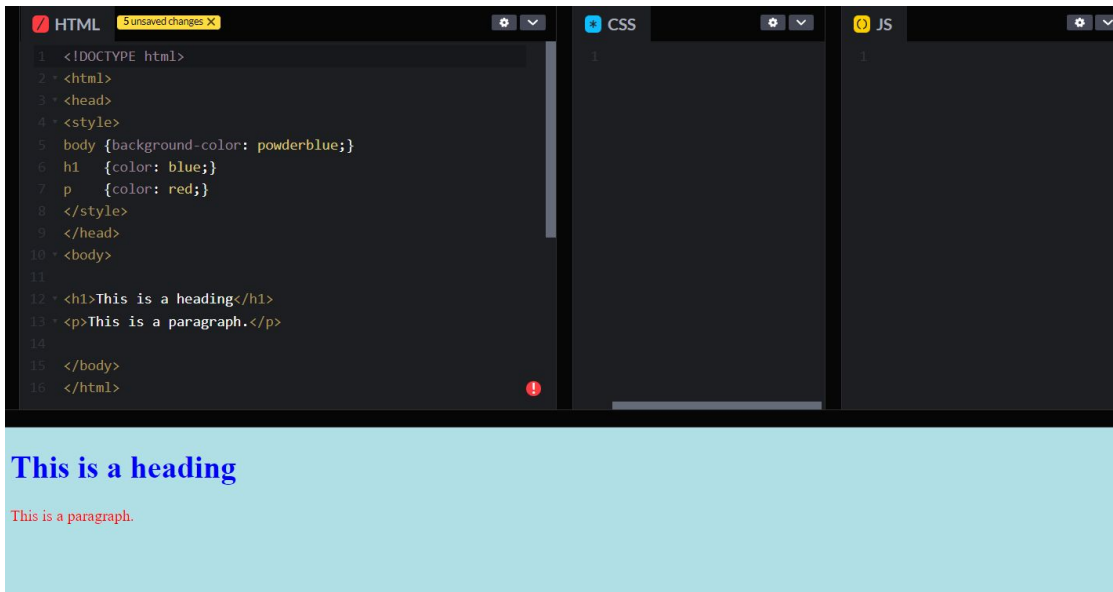
The example sets the text color of the <h1> element to red, and the text color of the <p> element to orange.

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Internal CSS

Internal CSS is used to define a style for a single HTML page. This mode uses the <head> section of an HTML page, within a <style> element.
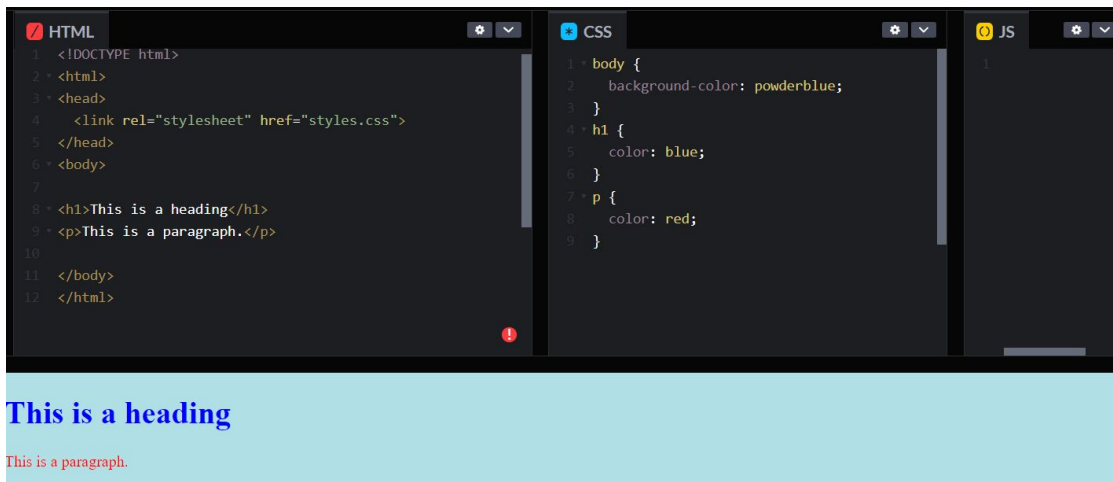
The example sets some styles to the html tags.

CSS basics

External CSS

External CSS is used to define the style for many HTML pages. This mode uses an external style sheet, add a link to it in the <head> section of each HTML page.

The file link the CSS file styles.css where the different styles are defined.

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External CSS (Link tag)

`<link href="main.css" rel="stylesheet" type="text/css" />`

The <link> tag defines the relationship between the current document and an external resource like a css file. The main properties of link tag are defined next:

- href: it specifies the location of the linked document.
- hreflang: it specifies the language of the text in the linked document.
- media: it specifies on what device the linked document will be displayed.
- rel (required): it specifies the relationship between the current document and the linked document.
- type: it specifies the media type of the linked document.

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CSS elements

CSS elements

CSS Selectors

CSS selectors are used to define the HTML elements we want to style. These are divided into five categories:

- Name selectors
- Id selectors
- Class selectors
- Grouping Selector
- Pseudo-class selectors

Simple Selectors

This type of selector is applied on an specific HTML elements based on the element name.

```css
p {
  text-align: center;
  color: orange;
}
```

We have applied 2 styles into element p. This means that this style will be apply over all p tags.

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Id Selectors

This type of selector is applied on an specific HTML elements based on the id attribute of the HTML element. Ids are are preceded by #.

```
#id1 {
  text-align: center;
  color: red;
}
```

We have to include an id into the HTML tag to apply the style, like:

<h1 id = "id1">This is a heading</h1>

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Class Selectors

This type of selector is applied on an specific HTML elements based on the class attribute of the HTML element. Classes are are preceded by .

```
.center {
 text-align: center;
 color: red;
}
```

We have to include an id into the HTML tag to apply the style, like:

<h1 class = "center">This is a heading</h1>

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Grouping Selectors

This type of selector is applied on an group of HTML elements based on the class, id or element name.

```
h1, h2, p {
  text-align: center;
  color: red;
}
```

Grouping Selectors

This type of selector is applied on an group of HTML elements based on the

class, id or element name.

```
h1, h2, p {
  text-align: center;
  color: red;
}
```

CSS Colors

CSS offers different ways to modify the color of the html tags.

- Background Color
- Text Color
- Border Color
- Color Values
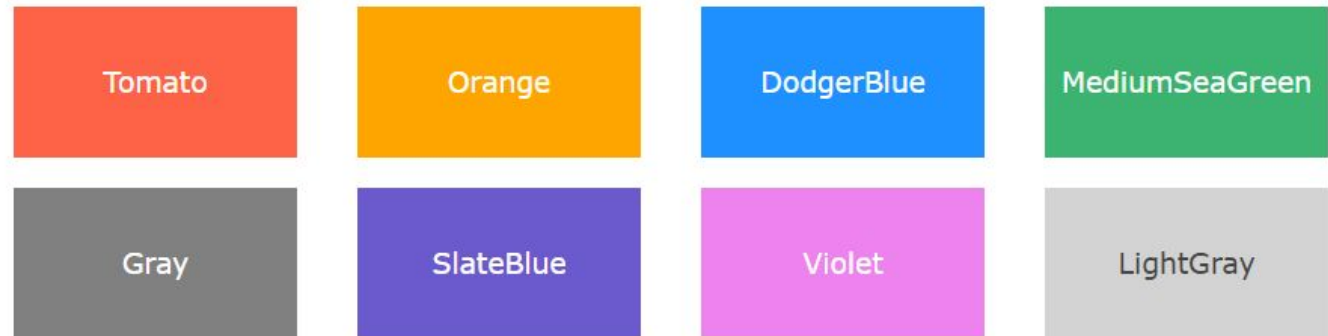
In CSS, a color can be specified by using a predefined (140 standard colors) color name.

CSS elements

Background Color

Background color is a property which defines the background color for a HTML element.


```
<body>
<h1 style="background-color: SlateBlue;">Hello World</h1>
<p style="background-color: Tomato;">Lorem ipsum ...... </p>
</body>
```

This example is not completed.

CSS elements

Text Color

Text color is a property which defines the text color for a HTML element.

Hello World

Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.
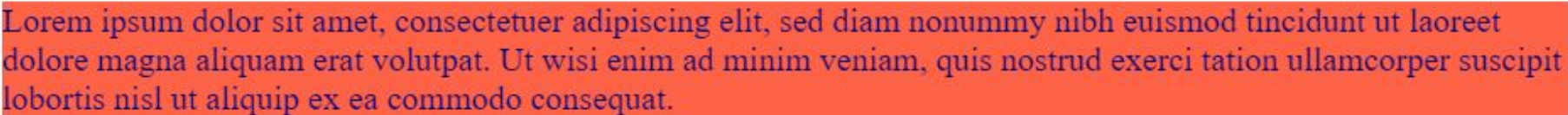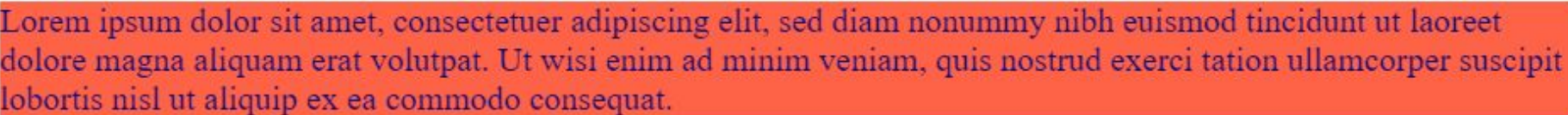
```
<body>

<h1 style="background-color: SlateBlue;">Hello World</h1>

<p style="background-color: Tomato; Tomato;color: navy;">Lorem ipsum …… </p>

</body>
```

This example is not completed.

CSS elements

Border Color

Text color is a property which defines the color of borders for a HTML element.


```
<body>
<h1 style="background-color: SlateBlue; border:10px solid Violet;">Hello World</h1>
<p style="background-color: Tomato; Tomato;color: navy;">Lorem ipsum …… </p>
</body>
```

This example is not completed.

Color values

CSS allows to specify colors using RGB values, HEX values, HSL values, RGBA values, and HSLA values:

Hello World

Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.

```
<body>
<h1 style="background-color:rgb(255, 99, 71); border:10px solid Violet;">Hello World</h1>
<p style="background-color: Tomato; Tomato;color: navy;">Lorem ipsum …… </p>
</body>
```

This example is not completed.

Color values (RGB)

An RGB color value represents RED, GREEN, and BLUE light sources.

rgb(red, green, blue)

Each parameter (red, green, and blue) defines the intensity of the color between 0 and 255.

Color values (RGBA)

RGBA color values are an extension of RGB color values with an alpha channel - which specifies the opacity for a color.

rgb(red, green, blue, alpha)

The alpha parameter is a number between 0.0 (fully transparent) and 1.0 (not transparent at all):

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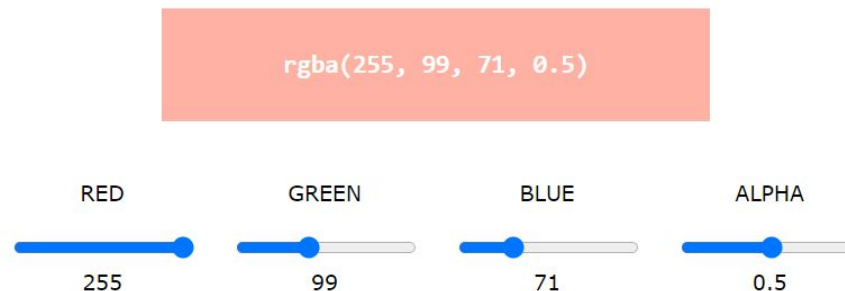
CSS fonts

CSS offers different ways to modify the style and weight font. We have basic font properties like normal, italic and bold.

```
p { font-style: normal; }
p { font-style: italic; }
p { font-weight: bold; }
```

We can change font choosing an specific font or size:

```
p { font-family: "Times New Roman", Georgia, Serif; font-size: 30px;}
```

Font size can be defined using pixels, percent, ems or rems.

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CSS elements

CSS fonts sizes

Relative length units

- px: One device pixel (dot) of the display. (1px is equal to 1/96th of 1in)
- mm: One millimeter.
- cm: One centimeter (10 millimeters).
- in: One inch (2.54 centimeters).
- pt: One point (which is 1/72 of an inch).
- pc: One pica (which is 12 points).

Absolute length units are best suited for paper, low-resolution screen or has a closed view from eyes to screen.

CSS fonts sizes

Relative length units

- em: font size of the element
- %: percentage values are always relative to another value, for example a length
- ex: x-height of the element's font (1ex ≈ 0.5em in many fonts)
- ch: width of the "0" (ZERO, U+0030) glyph in the element's font
- rem: font size of the root element
- vw: viewport's width, 1/100th of the width of the viewport.
- vh: viewport's height, 1/100th of the height of the viewport.
- vmin: minimum of the viewport's height and width
- vmax: maximum of the viewport's height and width
- keywords: xx-small, x-small, small, medium, large, x-large, xx-large

The relative length units are best suited for the web developers. em and percent are most common unit.

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The box model

The box model

Every HTML element you see on the page is treated as if it lives in its own box by the CSS box model.
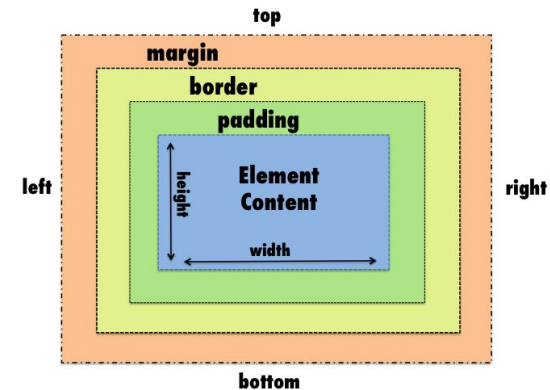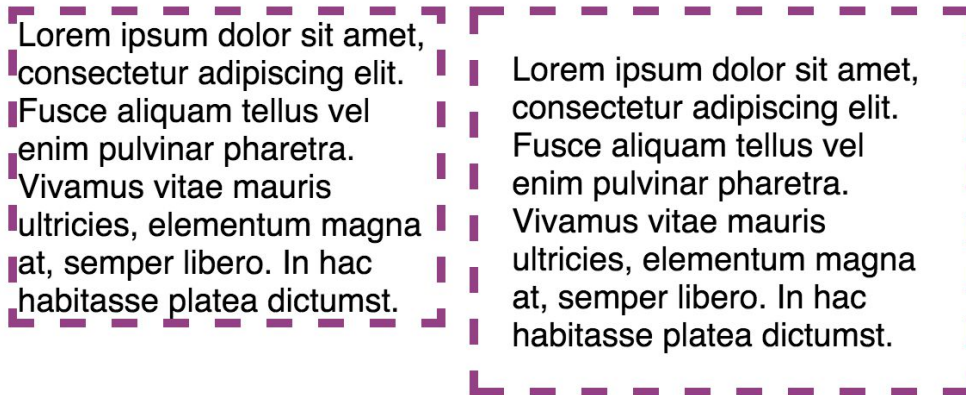
- Padding
- Border
- Margin
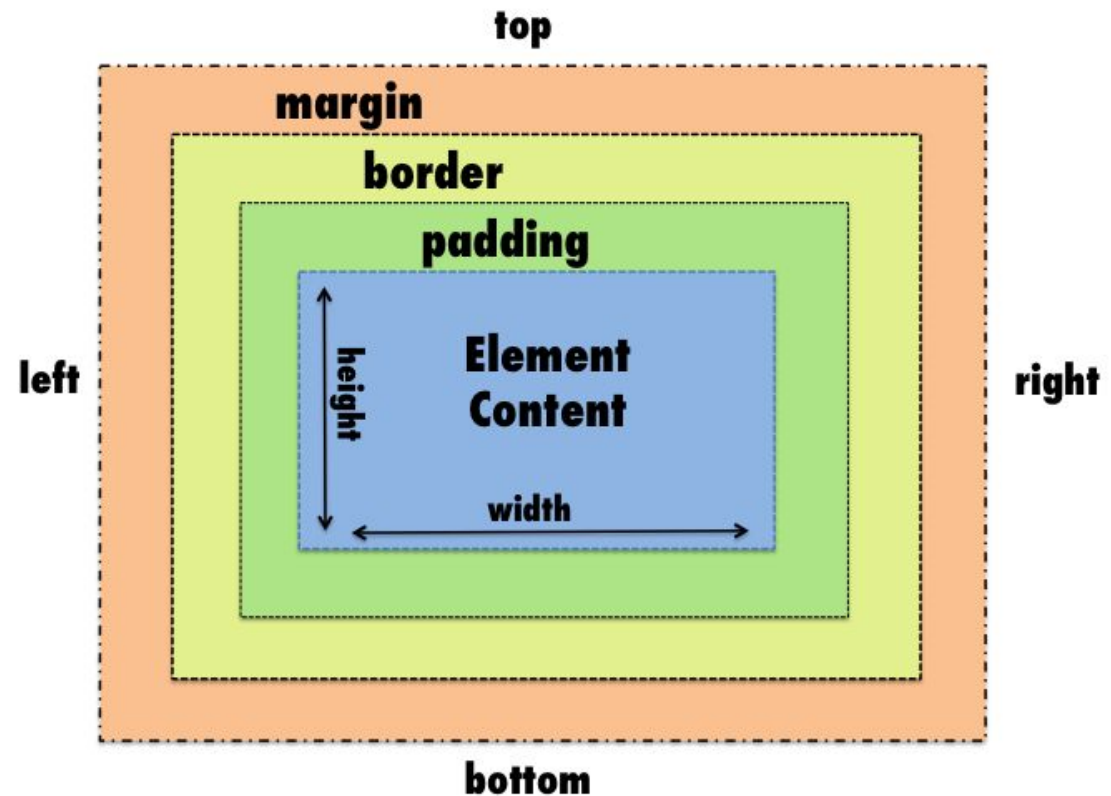
Padding

The padding is the space that surrounds the area between the content and border.
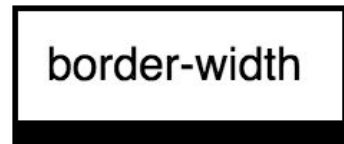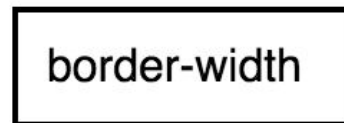

Padding can be added to every side, one side, a few sides, or specify no amount at all.

The box model

Border

The border is the element's edge that surrounds the content and padding. We can define three properties:
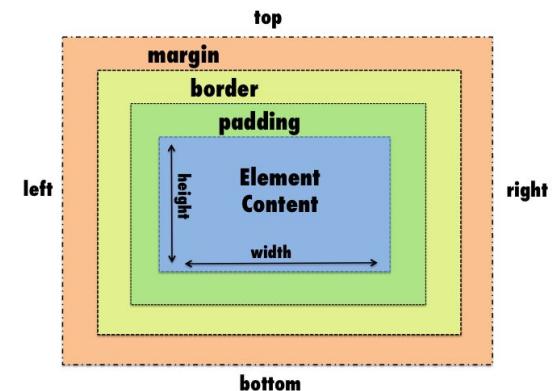
- Width
- Style
- Color

Margin

The margin is outside the edge of an element and it clears an area outside of the border to create gaps between elements.
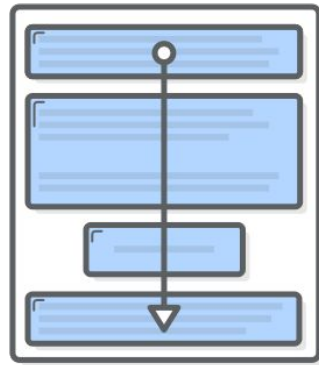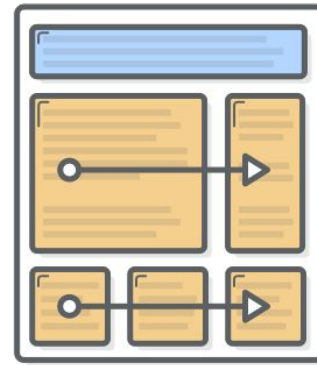
The floats model

The floats model

Floating information

Web pages have a defined using block elements that must float to adapt to the size of the screen or device where they are viewed.

**VERTICAL FLOW**   **HORIZONTAL FLOW**

Block elements can be defined in a vertical or horizontal way depending of the flow model we define.

The floats model

Floating information

"Floats" techniques let you put block-level elements side-by-side instead of on top of each other. It lets us build all sorts of layouts including:

- sidebars

- multi-column pages

- grids

- text and tables

- images
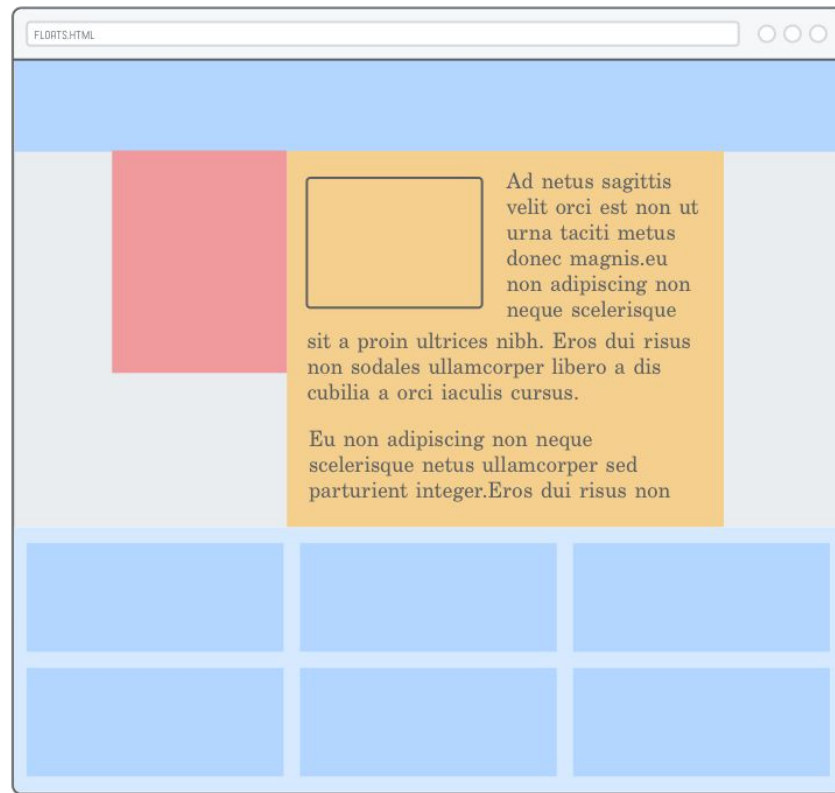
The floats model

Floating information

```html
<!DOCTYPE html>
<html lang='en'>
 <head>
  <meta charset='UTF-8' />
  <title>Floats</title>
  <link rel='stylesheet' href='styles.css'/>
 </head>
 <body>
  <div class='page'>
   <div class='menu'>Menu</div>
   <div class='sidebar'>Sidebar</div>
   <div class='content'>Content</div>
   <div class='footer'>Footer</div>
  </div>
 </body>
</html>
```
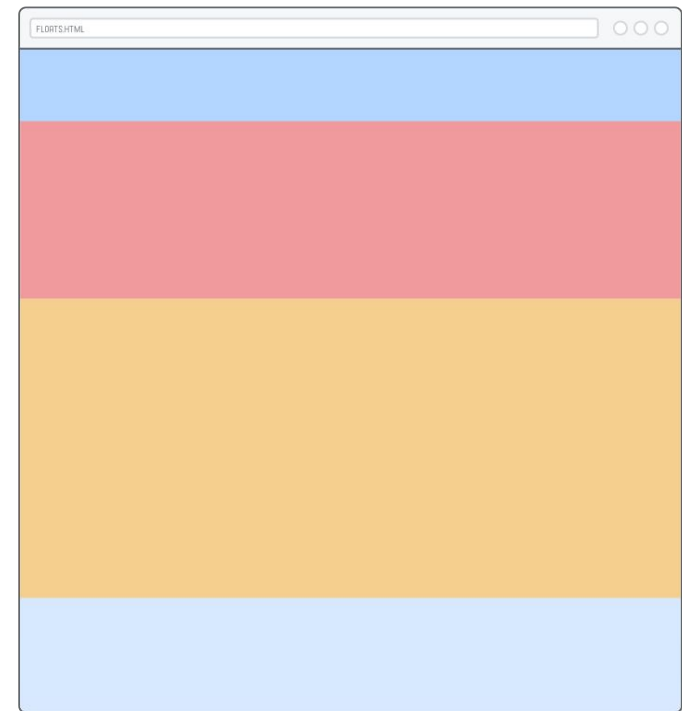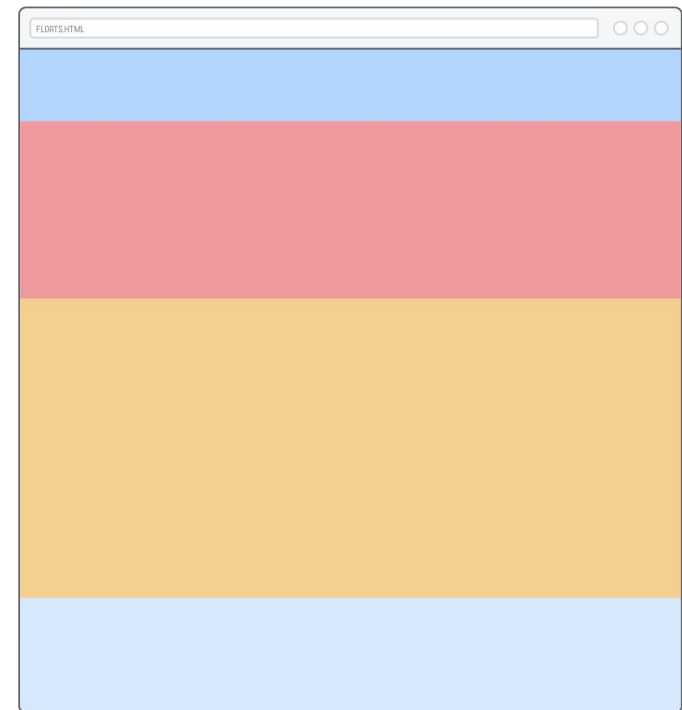
The floats model

Floating information

```css
* {
  margin: 0;
  padding: 0;
  box-sizing: border-box;
}
.menu {
  height: 100px;
  background-color: #B2D6FF;   /* Medium blue */
}
.sidebar {
  height: 300px;
  background-color: #F09A9D;   /* Red */
}
.content {
  height: 500px;
  background-color: #F5CF8E;   /* Yellow */
}
.footer {
  height: 200px;
  background-color: #D6E9FE;   /* Light blue */
}
```

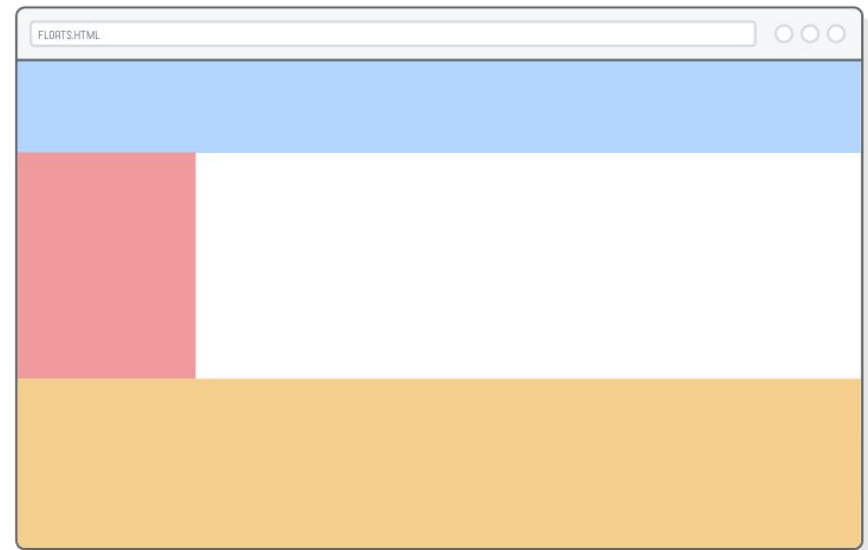The * means global in CSS. This means it is applied to all HTML elements.

Floating information

We can modify the position and size of one of our blocks.

```
.sidebar {
  width: 200px;
  height: 300px;
  background-color: #F09A9D;
}
```


The sidebar element gets narrower, but the rest of the boxes stay in the exact same position.

All the blocks are still rendered vertically one after another.

Floating information

The CSS float property gives us control over the horizontal position of an block. By "floating" the sidebar to the left, we are changing the position of the block in order to align it to the left side of the page.

```
.sidebar {
  float: left;           /* Add this */
  width: 200px;
  height: 300px;
  background-color: #F09A9D;
}
```

LEFT ALIGN
FLOAT: LEFT;

CENTER ALIGN
MARGIN: 0 AUTO;

RIGHT ALIGN
FLOAT: RIGHT;

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The floats model

Floating multiple information

When you float multiple elements in the same direction, they will stack horizontally.

```
.content {
  float: left;              /* Add this */
  width: 650px;
  height: 500px;
  background-color: #F5CF8E;
}

.page {                     /* Add this */
  width: 900px;
  margin: 0 auto;
}
```
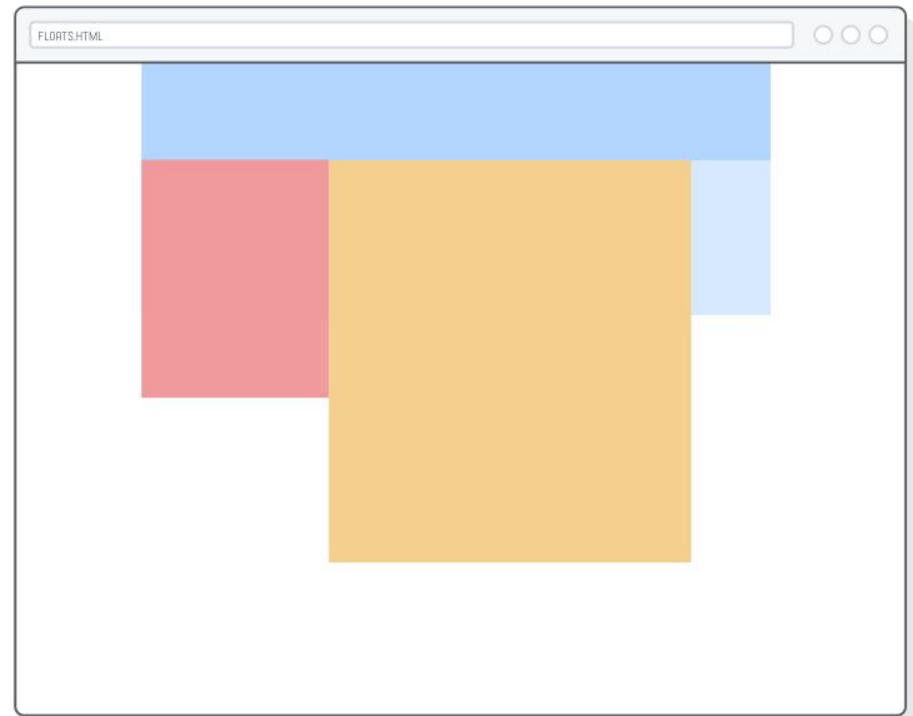
SIDEBAR LEFT
CONTENT LEFT

SIDEBAR LEFT
CONTENT RIGHT

SIDEBAR RIGHT
CONTENT LEFT

SIDEBAR RIGHT
CONTENT RIGHT

FLOATS.HTML

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The floats model

Floating multiple information

"Clearing" a float is when we tell a block to ignore any floats that appear before it.

```
.footer {
  clear: both;          /* Add this */
  height: 200px;
  background-color: #D6E9FE;
}
```
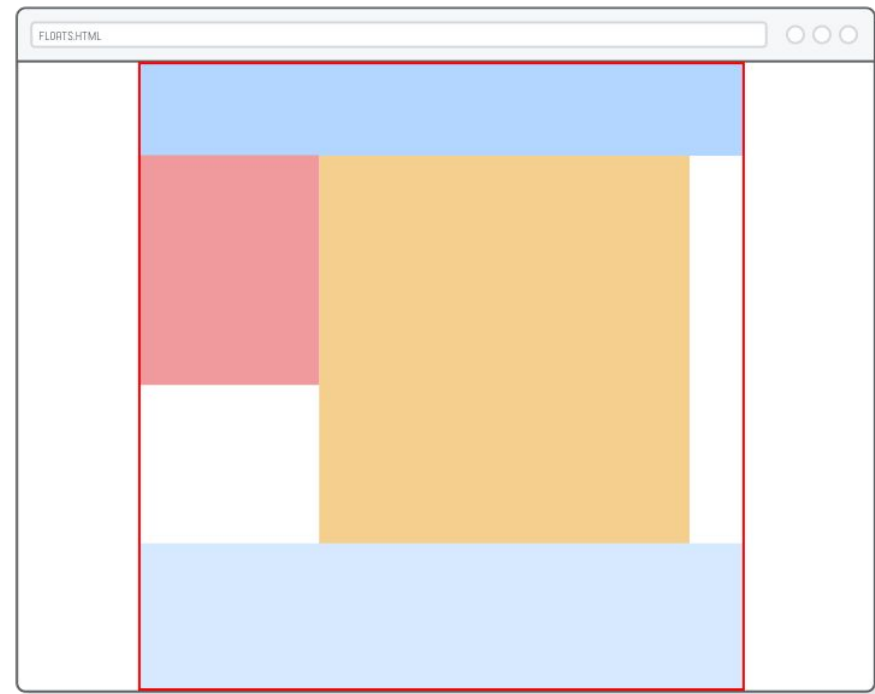

SIDEBAR LEFT
CONTENT LEFT

SIDEBAR LEFT
CONTENT RIGHT

SIDEBAR RIGHT
CONTENT LEFT

SIDEBAR RIGHT
CONTENT RIGHT

References

- https://www.w3schools.com/cssref/index.php

- https://htmlcheatsheet.com/css

- https://jigsaw.w3.org/css-validator

- https://divtable.com

- https://rgbcolorcode.com

- https://badhtml.com/bad-css-practices-to-avoid

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